

# A new species of the genus *Tyrannochthonius* from the Izu Peninsula, central Honshu, Japan (Arachnida: Pseudoscorpionida: Chthoniidae)

Hiroshi Sakayori

*Mitsukaido Daini Senior High School, Mitsukaido-hashimoto-cho 3549-4, Joso-shi,*

*Ibaraki Prefecture, 303-0003 Japan*

Received: 31 July 2008; Accepted 24 December 2008

**Abstract** A new species of chthoniid pseudoscorpion, *Tyrannochthonius chihayanus*, is described from the Izu Peninsula, central Honshu, Japan. This species can be distinguished from the congeneric species by having a body with a rounded and rudimentary epistomal process, with tergites I-V bearing 4-4-4-5(or 6)-6 setae each, and tergite X bearing 7-8 setae, with coxa II bearing 9-13 coxal spines; and having pedipalpal chelal fingers with heterodentate dentation and a spine-like guard seta near base of the fingers; and having slender pedipalpal femur (proportion of the length to the width: 4.0-4.3 in male and 3.9-4.3 in female).

**Key words:** Izu Peninsula, Japan, new species, pseudoscorpion, *Tyrannochthonius chihayanus*

The genus *Tyrannochthonius* (Chthoniidae), with about 100 described species (Harvey, 1990), is a group of pseudoscorpions usually found in soil-litter of mainly tropical and subtropical forests of the world. In Japan, two species have so far been described under the genus: *Tyrannochthonius japonicus* (Ellingsen, 1907) from Honshu, Shikoku and Kyushu (Morikawa, 1954, 1960), and *T. similidentatus* Sato, 1984 from Hahajima Island of the Bonin Islands (Sato, 1984).

During the course of the faunistic study of pseudoscorpions in Japan, an undescribed form of the genus *Tyrannochthonius* was found together with *T. japonicus* from Shimoda in the Izu Peninsula, Shizuoka Prefecture, central Honshu, Japan. Based on the close examination, the form is here described as a new species.

## Description

For chaetotaxy, measurements, and other numerical characters given in the text, numbers (or values) presented are principally derived from male holotype (or female allotype); and numbers (or values) in the parentheses indicate the range of variation based on the paratypes, when there is any variation.

*Tyrannochthonius chihayanus* sp. nov.

[Japanese name: Chihaya-togetsuchikanimushi]

(Figs. 1-11)

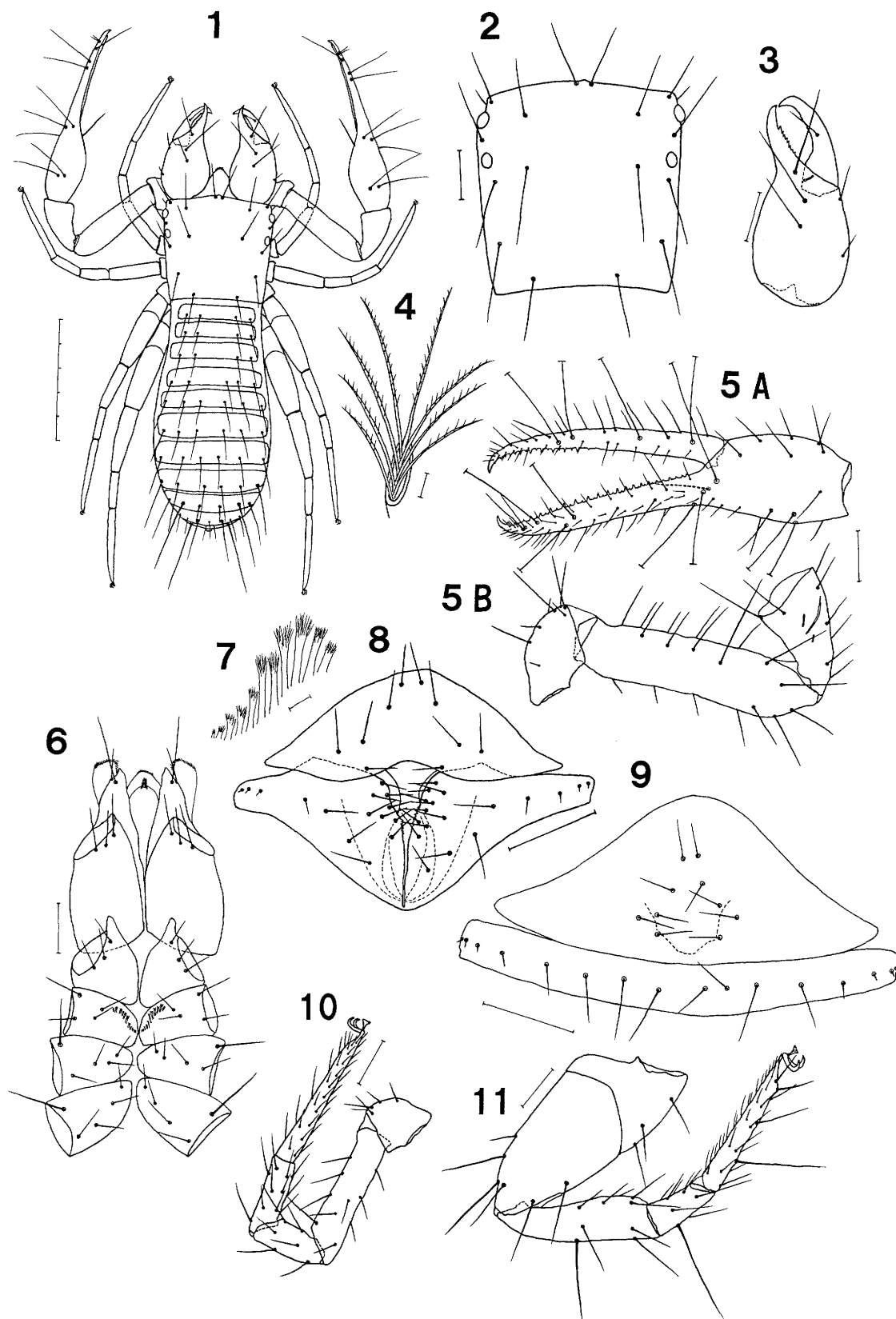
**Diagnosis.** This species is easily distinguished from other congeneric species by having following characters: 1) body with rounded and rudimentary epistomal process; 2) tergites I-V bearing 4-4-4-5(or 6)-6 setae each; 3) tergite X bearing 7-8 setae; 4) coxa II bearing 9-13 coxal spines; 5) pedipalpal chelal fingers with heterodentate dentation and a spine-like guard seta near base of the fingers; 6) slender pedipalpal femur (proportion of the length to the width: 4.0-4.3 in male and 3.9-4.3 in female).

**Description.** *Male* — Carapace and pedipalp slightly dark brown, other parts yellowish brown.

Carapace subquadrate (Figs. 1 and 2); as long as wide, constricted backward; laterally and posteriorly clearly tessellated; epistomal process very low, rounded and rudimentary; chaetotaxy 6-4-4-2-2,18, including a dwarf seta lying on both lateral sides of anterior margin; with 4 eyes, of which anterior eyes are convex and posterior ones flat.

Coxal area as in Fig. 6; coxa I medially with a prominent apical projection; coxal chaetotaxy generally 2-3-0:3-0:2-2-cs :2-3:2-3; coxa II with 11 (in male holotype; 9-13 in four male paratypes) incised coxal spines (cs) in an obliquely transverse row (Fig. 7). Intercoxal tubercle absent.

Abdomen ovate; surfaces of tergites and sternites essentially smooth and tessellated; pleural membranes densely granulate; tergal chaetotaxy 4:4:4:5(5-6):6:6(5-6):6:6:6(6



**Figs. 1–11.** *Tyrannochthonius chihayanus* sp. nov. (Figs. 1–8 and 11, holotype, male; 10, paratype INM-1-038769, male; 9, allotype, female) 1. habitus, dorsal view; 2. carapace, dorsal view; 3. right chelicera (serrulae omitted), dorsal view; 4. flagellum, ventral view; 5. right pedipalp: A- chela, lateral view, B- other segments, dorsal view; 6. coxal area, ventral view; 7. coxal spine, ventral view; 8–9. external genital area, ventral view (8, male; 9, female); 10. right leg I, lateral view; 11. right leg IV, lateral view. Scale lines = 0.5 mm for Fig. 1, 0.1mm for Figs. 2, 3, 5, 6, 8–11 and 0.01 mm for Figs. 4 and 7.

-8):7:4:0, including long tactile setae on tergite XI; sternal chaetotaxy 2/2/2/4:[4-4]:8(8-11)-10(9-13)/15(14-15):12(12-14):8:7(8-10):9(9-10):9(9-11): 10(10-12):10(9-10):0:2, including microsetae on sternites III to VII and long tactile setae on sternite IX to XI. External genital areas of male as shown in Fig. 8.

Chelicera as in Fig. 3; palm with 5 setae; a galeal seta located at middle of movable finger, flagellum with 8 irregularly pinnate blades (Fig. 4); fixed finger with 9-10 (9-11) teeth, which increase in size toward tip of finger; movable finger with 13-14 (12-14) small teeth; galea absent.

Pedipalp as in Figs. 5A and 5B; trochanter 1.7, femur 4.1 (4.0-4.3) and tibia 1.8 (1.6-1.9) times as long as wide. Trichobothria as shown in Fig. 5A; 12 chelal trichobothria present, of which 8 are on fixed and 4 on movable fingers; on movable finger *sb* located slightly nearer to *b* than to *st*. Hand with a conspicuous spine like seta on median part near base of fingers. Fixed finger with 23 (23-24) large, well-spaced teeth over whole length plus 14 (10-13) very small intercalary teeth between anterior teeth; teeth triangular, pointed and spaced from each other; distal and proximal teeth slightly smaller than central ones. Movable finger with 10 (10-11) well-spaced teeth in distal half plus 6 (5-7) small intercalary teeth along the anterior teeth.

Legs I and IV as in Figs. 10 and 11, respectively. Leg IV with a long tactile seta on tibia, metatarsus and telotarsus each.

*Female* — Generally similar to male, but a little larger and with slightly robust palps. Coxa II with 12 (11-13) incised coxal spines in an oblique transverse row.

Tergal chaetotaxy 4:4:4:6:7(6-7):7(5-6):6:7(6-7):8(7-8):7:4:0, including long tactile setae on tergite XI; sternal chaetotaxy 2/2/2/4:16(15):13(14):11(9-10):10(9):9:11(11-12): 10(12-13):9(9-11):0:2, including microsetae on sternites III to VII, and long tactile setae on sternite X. External genital areas of female as shown in Fig. 9.

Chelicera as in male. Fixed finger with 9 (9-10) teeth, which increase in size toward tip of finger; movable finger with 12 (14-16) small teeth.

Pedipalpal trochanter 1.7 (1.6-1.7), femur 4.2 (3.9-4.3) and tibia 1.8 (1.6-1.9) times as long as wide. Fixed finger with 21 (23-24) large, well-spaced teeth over whole length plus 12 (10-13) very small intercalary teeth between anterior teeth. Movable finger with 11 (10-12) well-spaced teeth in anterior half and with 6 (5-7) small intercalary teeth along the anterior teeth.

*Measurements* (in mm): *Male* — Body length 1.35 (1.33-1.44). Carapace 0.45 (0.42-0.47) long, anterior width 0.44 (0.40-0.49), ocular width 0.47 (0.44-0.52). Chelicera 0.36 (0.36-0.38) long by 0.21(0.20-0.22) wide; movable finger 0.21 (0.21-0.23) long. Pedipalpal trochanter 0.22 (0.21-0.22) long by 0.13 (0.12-0.13) wide; femur 0.50 (0.50-0.53) long by 0.12 (0.12-0.13) wide; tibia 0.24 (0.24-0.25) long by 0.13(0.13-0.16) wide; chela 0.73 (0.73-0.77) long; palm 0.24 (0.23-0.26) long by 0.16 (0.16-0.17) wide; movable finger 0.46 (0.46-0.50) long. Leg I: basifemur 0.27 (0.27-0.29) long by 0.07 wide, telofemur 0.14 (0.14-0.15) long by 0.06 (0.06-0.07) wide; tibia 0.17 (0.16-0.18) long by 0.05 (0.05-0.06) wide; tarsus 0.31 (0.31-0.33) long by 0.04 wide. Leg IV: basifemur 0.20 (0.20-0.22) long by 0.22 (0.19-0.23) wide, telofemur 0.30 (0.30-0.32) long by 0.20 (0.17-0.22) wide, tibia 0.34 (0.34-0.36) long by 0.10 (0.09-0.10) wide; metatarsus 0.14 (0.13-0.16) long by 0.07 wide; telotarsus 0.30 (0.30-0.32) long by 0.04 wide.

*Female* — Body length 1.52 (1.34-1.56). Carapace 0.49 (0.45-0.52) long, anterior width 0.52 (0.46-0.52), ocular width 0.54 (0.49-0.54). Chelicera 0.42 (0.39-0.41) long by 0.24 (0.22-0.25) wide; movable finger 0.25 (0.23-0.26) long. Pedipalpal trochanter 0.22 (0.22-0.23) long by 0.13 (0.13-0.15) wide femur 0.55 (0.52-0.56) long by 0.13 (0.12-0.14) wide; tibia 0.27 (0.26-0.28) long by 0.15(0.15-0.18) wide; chela 0.81 (0.77-0.83) long; palm 0.26 (0.25-0.27) long by 0.18 (0.18-0.20) wide; movable finger 0.52 (0.50-0.54) long. Leg I: basifemur 0.30 (0.29-0.32) long by 0.08 (0.07-0.08) wide, telofemur 0.16 (0.15-0.16) long by 0.07 wide; tibia 0.18 (0.17-0.18) long by 0.06 wide; tarsus 0.34 (0.33-0.35) long by 0.05 wide. Leg IV: basifemur 0.20 (0.19-0.22) long by 0.21 (0.21-0.22) wide, telofemur 0.32 (0.30-0.34) long by 0.19 (0.19-0.21) wide, tibia 0.37 (0.35-0.37) long by 0.10 (0.09-0.10) wide; metatarsus 0.15 (0.15-0.16) long by 0.07 (0.07-0.08) wide; telotarsus 0.33 (0.32-0.34) long by 0.04 (0.04-0.05) wide.

*Type material.* Holotype: male, taken from litter-rich A<sub>0</sub> layer of soil in a secondary ever-green forest in Shimoda Park, Shimoda-shi, Shizuoka Prefecture, collected by K. Ishii, 15-III-2004. Allotype (♀) and paratypes 4 ♂, 3 ♀, same data as for the holotype. Holotype (INM-1-038769), allotype (INM-1-038770) and four paratypes (2 ♂ INM-1-038771-2, 2 ♀ INM-1-038773-4) are deposited in the Ibaraki Nature Museum, Bando-shi, Ibaraki Pref., Japan, and the remaining paratypes, 2 ♂ and 1 ♀, are in my collection.

*Distribution.* Japan (Honshu).

**Etymology.** The specific name is dedicated to Mrs. Chihaya Kiyosumi, a science teacher in my junior high school days.

**Remarks.** The present species resembles *T. japonicus* (Ellingsen, 1907) in having 6-4-4-2-2, 18 setae on carapace and 9-13 coxal spines on coxa II, but differs from *T. japonicus* in having a rounded and rudimentary epistomal process (in *japonicus*, triangular with a few tiny points) and heterodentate dentation on pedipalpal chelal fingers (in *japonicus*, with subequal teeth).

The species further resembles *T. robustus* Beier, 1951 from Vietnam and *T. spinatus* Hong, Kim & Lee, 1996 from Korea, as well, in having 6-2, 18 setae on carapace, four setae each on first three tergites and heterodentate dentation on pedipalpal chelal fingers, but differs from *T. robustus* in having a rounded and rudimentary epistomal process (in *robustus*, with small acute triangular process), and in possessing 9-13 coxal spine on coxa II (in *robustus*, eight spines), and the proportion of pedipalpal femur 3.9-4.3 in female (in *robustus*, 3.7(female)), and differs from *T. spinatus* in possessing a spine-like guard seta near base of pedipalpal fingers (in *spinatus*, with two setae), in possessing 7-8 setae on tergite X (in *spinatus*, with only four setae) and the proportion of pedipalpal femur 4.0-4.3 in male and 3.9-4.3 in female (in *spinatus*, 3.12-3.93 as a whole).

### Acknowledgements

I wish to express my hearty thanks to Dr. Hiroshi Tamura, Professor Emeritus of Ibaraki University, for his continuous encouragement and careful reading of the manuscript. Thanks are also due to Dr. Kuniyasu Morikawa, for his invaluable advice, and to Dr. Kiyoshi Ishii, Department of Biology, Dokkyo University School of Medicine, for providing me the present materials.

### 摘要

坂寄 廣 (茨城県立水海道第二高等学校 〒303-0003

茨城県常総市水海道橋本町 3549-4) 静岡県伊豆半島から採集されたツチカニムシ科の 1 新種.

静岡県下田市にある下田公園内の森林の落葉土壌層より, *Tyrannochthonius japonicus* (ムネトゲツチカニムシ) とともに採集されたツチカニムシ科の未記載種を, *T. chihayanus* sp. nov. (チハヤトゲツチカニムシ, 新称) と命名して新種記載した. 本種は口上突起が丸く痕跡的であること, 腹部背板 I から V までの毛序式が 4-4-4-5(or 6)-6 であること, 腹部第 10 背板の剛毛数が 7-8 本であること, 触手鋏の歯が大歯と小歯が交互に生えること, 第 2 基節の基節棘の数が 9-13 本であること, 触手鋏基部に 1 本の太い棘があること, そして触手腿節の長さとの比が雄で 4.0-4.3, 雌で 3.9-4.3 である点で同属の他種から区別される.

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